

GUJARAT TECHNOLOGICAL UNIVERSITY**BE - SEMESTER-V (NEW) EXAMINATION – SUMMER 2019****Subject Code: 2152604****Date: 31/05/2019****Subject Name: Rheology of Rubber****Time: 02:30 PM TO 05:00 PM****Total Marks: 70****Instructions:**

1. Attempt all questions.
2. Make suitable assumptions wherever necessary.
3. Figures to the right indicate full marks.

		MARKS
Q.1	(a) Write the equation for Reiner-Philipoff model.	03
	(b) Give the difference between viscoelastic and viscoplastic fluids.	04
	(c) Explain in detail about Bingham plastic and Ellis model.	07
Q.2	(a) Define the term: (i) Melt flow Index (ii)Viscoelasticity (iii) Laminar flow	03
	(b) Write a brief note on Turbulent flow.	04
	(c) Derive the momentum flux distribution equation for flow through Falling film.	07
	OR	
	(c) Derive the velocity profile equation for flow through a circular tube.	07
Q.3	(a) Write the importance of Reynolds number in Fluid flow.	03
	(b) Give the difference between the Dilatant and pseudo plastic fluid.	04
	(c) Short note on “Turbulence damping”.	07
	OR	
Q.3	(a) Write the equation for the shell momentum balance.	03
	(b) State the assumptions implied in the development of Hagen poiseuille law.	04
	(c) Explain the velocity profile for Newtonian and non-Newtonian fluid.	07
Q.4	(a) Give the limitations of plunger viscometer.	03
	(b) Write a brief note on falling sphere viscometer.	04
	(c) Explain in detail about the cup and bob viscometer.	07
	OR	
Q.4	(a) Give the importance of compression rheometer.	03
	(b) Write a brief note on plunger viscometer.	04
	(c) Derive the equation for capillary viscometer.	07
Q.5	(a) List out the variable influencing the Rheology of rubber.	03
	(b) Write in brief about the effect of temperature on viscosity.	04
	(c) Explain the “Molecular Motion” in detail.	07
	OR	
Q.5	(a) Give the effect of molecular weight and molecular structure on viscosity	03
	(b) Write the equation for zero shear viscosity.	04
	(c) Short note on “ Entanglement of Molecules”	07
